

Eeshan Hasan

Cognitive Science Program, Department of Psychological and Brain Sciences, Indiana University

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RESEARCH STATEMENT

I adopt a joint computational and experimental approach to better understand cognitive decision making processes. I use the insights from my research to design and test interventions to improve the quality of decisions in critical environments like medical decision making and social media interactions. My research draws on developments in artificial intelligence to develop methods to understand human decision making. Conversely, I use models of human decisions to design reliable and robust artificial intelligence algorithms.

EDUCATION

- 08/2022 – Present *Department of Psychological and Brain Sciences, Indiana University*
Cognitive Science Program, Indiana University
PhD Student (GPA – 4.0/4.0)
Computational Decision Making Lab. [Advisor: Jennifer Trueblood]
- 08/2019 – 07/2022 *Department of Psychology, Vanderbilt University*
Masters in Psychological Sciences (GPA – 4.0/4.0)
Computational Decision Making Lab. [Advisor: Jennifer Trueblood]
Transferred to Indiana University along with Jennifer Trueblood
- 08/2013 – 05/2018 *Department of Mathematics, University of Hyderabad*
Integrated Masters in Mathematics (Bachelors + Masters)
First Class with Distinction (GPA – 8.8/10.0)

PROFESSIONAL EXPERIENCE

- 05/2017 – 05/2019 *MyCol Healthcare Pvt Limited*
Mathematician/Data-Scientist
I built mathematical and predictive models using artificial intelligence and machine learning models to gain insights and improve healthcare systems.

AWARDS & HONORS

- 06/2024 **Indiana University Bhatt Travel Award**
An award given by the Indiana University for student travel to conference.
- 05/2023 **2023 William K Estes Summer Research Award**
An award given by the Psychology Department to identify and encourage individuals with a potential for computational modeling. (\$5000)
- 05/2021 **Computational Modeling Award in Applied Cognition**
An award given by the Cognitive Science Society for the best applied cognitive modeling paper at the annual meeting: *Improving Medical Image Decision Making by Leveraging Metacognitive Processes and Representational Similarity*

- 08/2020 **Vanderbilt Psychology Scholarship**
An award given in the Psychology department for outstanding performance for the year
- 08/2019 – 07/2022 **Vanderbilt University Graduate Student Scholarship**
The Vanderbilt Graduate Student Fellowship is guaranteed financial support from the Vanderbilt University. This competitive scholarship is meant to fund doctoral candidates for research and tuition during their stay in the university. The award was relinquished upon moving to Indiana University in 2022.
- 2018 **JRF - Mathematical Sciences**
The junior research fellowship is a highly selective grant that is awarded to students in India through a competitive examination. It provides funding for them to conduct research in any nationally funded laboratory and for their graduate education.
- 08/2014-05/2018 **KVPY**
The Kishore Vaigyanik Protsahan Yojana (KVPY) is an on-going National Program of Fellowship in Basic Sciences funded by Department of Science and Technology, India. It has a highly competitive selection procedure with only approximately 50 students being selected for it across all sciences. It provides a generous fellowship for students during their studies and encourages research activity by providing an annual contingency grant.

PUBLICATIONS

- Hasan, E., Epping, G. P., Lorenzo-Luaces, L., Bollen, J., & Trueblood, J. S.** (2024, Under Review). One shot intervention reduces online engagement with distorted content. <https://doi.org/10.31234/osf.io/47cqw>
- Hasan, E., Liu, Y., Owens, N., Trueblood J. S.** (In Press) A Registered Report on presentation factors that influence the attraction effect Judgment and Decision Making. <https://doi.org/10.31234/osf.io/rfcgp>
- Hasan, E., Duhaime, E. P., & Trueblood, J.** (2024). Boosting Wisdom of the Crowd for Medical Image Annotation Using Training Performance and Task Features. *Cognitive Research Principles and Implications* <https://doi.org/10.1186/s41235-024-00558-6>
- Hasan, E., & Trueblood, J. S.** (2024). The Role of Salience in Multialternative Multiattribute Choice. *Proceedings of the Annual Meeting of the Cognitive Science Society* <https://escholarship.org/uc/item/5jq8n5w9>
- Hasan, E., Eichbaum, Q., Seegmiller, A. C., Stratton, C., & Trueblood, J. S.** (2023). Harnessing the wisdom of the confident crowd in medical image decision-making. *Decision* <https://doi.org/10.1037/dec0000210>
- Hasan, E., Eichbaum, Q., Seegmiller, A. C., Stratton, C., & Trueblood, J. S.** (2022). Improving Medical Image Decision-Making by Leveraging Metacognitive Processes and Representational Similarity. *Topics in Cognitive Science*. <https://doi.org/10.1111/tops.12588>
[Won the Computational Modeling Prize in Applied Cognition Category from the Cognitive Science Society]
- Hasan, E., & Trueblood, J. S.** (2022). Representational Smoothing to Improve Medical Image Decision Making. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 44, No. 44). <https://escholarship.org/uc/item/4p6878mm>

CONFERENCE POSTERS AND TALKS

- Hasan, E., & Trueblood, J. S. (2024).** The Role of Saliency in Multialternative Multiattribute Choice. *The Annual Meeting of the Cognitive Science Society 2024*
- Hasan, E., & Trueblood, J. S. (2024).** Comparing the impact of medical image classification training on human and machine representations. *The Meeting of the Society for Mathematical Psychology 2024*
- Hasan, E., Liu, Y., Owens, N., Trueblood J. S. (2024)** A Registered Report on presentation factors that influence the attraction effect Judgment and Decision Making. *The Midwest Cognitive Science Society 2024*
- Hasan, E., Duhaime, E. P., & Trueblood, J. (2023).** Performance-based Wisdom of the Crowd Algorithms for Medical Image Dataset Labeling *Medical Imaging meets NeurIPS. Workshop at NeurIPS.2024*
- Hasan, E., & Trueblood, J. (2023).** Computationally Modeling the Role of Bottom-up Attention in Multi-Attribute Choice. *The Annual Meeting of the Psychonomic Society*
- Hasan, E., & Trueblood, J. (2023).** The Role of Saliency Driven Attention in Multi-Attribute Choice. *The Annual Meeting of the Society for Judgment and Decision Making*
- Hasan, E., & Trueblood, J. (2023).** The Role of Saliency-Driven Attention on Multialternative Multiattribute Choice. Abstract published at MathPsych/ICCM/EMPG 2023. Via mathpsych.org/presentation/1203.
- Hasan, E., & Trueblood, J. (2022).** Representational Smoothing to Improve Medical Image Decision Making. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 44, No. 44).
- Hasan, E., & Trueblood, J. (2022).** Denoising and Debiasing Medical Image Decisions using Representational Smoothing. *Annual Meeting of the Society of Mathematical Psychology*
- Hasan, E., & Trueblood, J. (2022)** The Wisdom of the Confident Crowd in Medical Image Decision-making. *Annual Meeting of the Society for Judgment and Decision Making*
- Hasan, E., Duhaime, E., Sekhar, T., Trueblood J. S., (2022)** Improving Medical Image Classification using Wisdom of the Crowds. *Annual Meeting of the Psychonomic Society*
- Hasan, E., Trueblood J.S., Eichbaum, Q., Seegmiller, A., Stratton, C. (2022)** Leveraging Representational Similarity to Improve Medical Image Decision Making *Society for Judgment and Decision Making [Accepted as a Talk]*
- Hasan, E., Trueblood J.S., Eichbaum, Q., Seegmiller, A., Stratton, C. (2021)** Representational Denoising for Improving Medical Image Decision Making *NeurIPS Workshop on Human and Machine Decision Making* <https://sites.google.com/view/whmd2021/home>
- Hasan, E., Trueblood J.S., Eichbaum, Q., Seegmiller, A., Stratton, C. (2021)** Improving Medical Image Decision Making by Leveraging Representational Similarity *Society for Mathematical Psychology [Accepted as a Talk]*

Hasan E. (2021) Learning Multiattribute Choice in an Unknown Environment *Summer Institute on Bounded Rationality at Max Plank Institute*

Hasan, E., Trueblood J.S., Eichbaum, Q., Seegmiller, A., Stratton, C. (2021) Improving Medical Image Decision Making by Similarity Based Aggregation *Psychonomics*

Hasan, E., Trueblood J.S., Eichbaum, Q., Seegmiller, A., Stratton, C. (2021) Improving Medical Image Decision Making by Leveraging Metacognitive Processes and Representational Similarity . *Proceedings of the Cognitive Science Society*

Hasan, E., Trueblood J.S. (2020) Defining a grammar for strategies in Multi-attribute Choice. *Society for Mathematical Psychology*.

Hasan, E., Eichbaum, Q., Daniels, P., Trueblood J.S. (2020) Wisdom of the Crowds for Naturalistic Image Categorization and Decision Making. *Virtual Psychonomics*

REVIEWING EXPERIENCE

Journal of Mathematical Psychology

Judgment and Decision Making

Unireps - Workshop @ NeurIPS 2023

Proceedings of the Cognitive Science Society

TEACHING EXPERIENCE

2023, 2024 The Science of Choice – *Assistant Instructor*

2022 Introduction to Statistics – *Assistant Instructor*

2020, 2021 Behavioral Decision Making – *Teaching Assistant*

2020 Human Sexuality – *Teaching Assistant*

2019 General Psychology – *Teaching Assistant*

STUDENTS MENTORED

Ke (Taylor) Lai Honors Student Computational Decision Making Lab (2021 – 2023)
[Now a PhD Student at Duke]

Nicole Owens Research Assistant Computational Decision Making Lab. (2020-2021)

Helena Khalif High School Student Computational Decision Making Lab. (2020-2021)

GRADUATE COURSEWORK

Teaching of Psychology

Philosophy of Cognitive Science

Readings at the Interface of Machine Learning and Cognitive Science

Computational Models of Attention

Emotions

Scientific Writing

Human Cognition

Models of Human Memory

Developmental Psychology

Computational Neuroscience of Vision

Computation Cognitive Modeling

Computational Neuroscience

Bayesian Cognitive Modeling

Psychological Measurement

Introduction to Cognitive Science

Algebra :(I-IV)

Analysis: Real (I,II), Complex, Functional, Advanced Functional